

**IN THE CLAIMS:**

Please cancel claims 1-16 without prejudice or disclaimer. Please add new claims 17-35 as follows.

Claim 1-16 (canceled)

17. (New) An arbiter circuit for resolving a plurality of N request signals received from a plurality of agents requesting access to a resource, said arbiter circuit comprising:

a token distribution circuit responsive to a first clock signal defining a grant cycle, and providing a plurality of token priority signals, said distribution circuit being operative to assert a prioritized one of said token priority signals upon completion of said grant cycle;

a device configured to mediate signals on a token ring; and

a plurality of N grant devices coupled together by said token ring, at least one of said grant devices being responsive to a corresponding one of said request signals, to a corresponding one of said token priority signals, and to a corresponding token carry signal.

18. (New) The arbiter circuit as recited in claim 17 wherein a particular token carry signal received by a particular one of said devices is provided by an adjacent one of said devices via said mediation device, and wherein said particular token carry signal is asserted by said adjacent device if a request signal received by said adjacent device is not asserted and either a token priority signal received by said adjacent device or a token carry signal received by said adjacent device is asserted.

19. (New) The arbiter circuit as recited in claim 17 wherein said token distribution

circuit comprises an N-bit shift register having a plurality of N flip-flops, at least one N flip-flop having an output providing one of said token priority signals, and wherein one of said flip-flops is preset to an active value, and the remainder of said flip-flops is preset to an inactive value.

20. The arbiter circuit as recited in claim 17 wherein:

at least one of said grant devices is operative to generate a corresponding token propagate signal in response to a corresponding request signal, and also operative to generate a corresponding token generate signal in response to a corresponding token priority signal and a corresponding request signal; and

said mediation device includes a token look ahead device operative to generate said token carry signals in response to said token propagate signals and said token generate signals, said token look ahead device for increasing the operational frequency of said arbiter circuit.

21. (New) The arbiter circuit as recited in claim 20 wherein:

at least one of said grant devices is also operative to assert a corresponding token propagate signal provided that a corresponding request signal is de-asserted; and

at least one of said grant devices is further operative to assert a corresponding token generate signal if a corresponding token priority signal is asserted while a corresponding request signal is de-asserted.

22. (New) The arbiter circuit as recited in claim 20 wherein said token look ahead device includes a circuit token carry input coupled to receive one of said token carry signals via a feed back path.

23. (New) The arbiter circuit as recited in claim 21 wherein  $N=4$ , wherein said token look ahead device is operative to provide four token carry signals, and wherein:

a first one of said token carry signals is provided to a second one of said four grant devices in response to a token propagate signal provided by a first one of said four grant devices, a token generate signal provided by said first grant device, and a fourth one of said token carry signals;

a second one of said token carry signals is provided to a third one of said four grant devices in response to token generate signals provided by said first and second grant devices, token propagate signals provided by said first and second grant devices, and said fourth token carry signal;

a third one of said token carry signals is provided to a fourth one of said four grant devices in response to token generate signals provided by said first, second, and third grant devices, token propagate signals provided by said first, second, and third grant devices, and said fourth token carry signal; and

said fourth one of said token carry signals is provided to said first grant device in response to said token generate signals provided by at least one of said grant devices, said token propagate signals, and said fourth token carry signal.

24. (New) An arbiter circuit for use in a network switch for resolving a plurality of N request signals received from a plurality of agents requesting access to a resource, said arbiter circuit comprising:

a token distribution circuit responsive to a first clock signal defining a grant cycle, and providing a plurality of token priority signals, said distribution circuit being operative to assert a prioritized one of said token priority signals upon completion of at least one said grant cycle;

a mediation device configured to mediate signals on a token ring; and

a plurality of N grant devices coupled together by said token ring, at least one of said grant devices being responsive to a corresponding one of said request signals, to a corresponding one of said token priority signals, and to a corresponding token carry signal.

25. (New) The arbiter circuit for use in a network switch as recited in claim 24 wherein said resource includes a packet routing table.

26. (New) The arbiter circuit for use in a network switch as recited in claim 24 wherein said resource is a network output port.

27. (New) The arbiter circuit for use in a network switch as recited in claim 24 wherein a particular token carry signal received by a particular one of said devices is provided by an adjacent one of said devices via said mediation device, and wherein said particular token carry signal is asserted by said adjacent device if a request signal received

by said adjacent device is not asserted and either a token priority signal received by said adjacent device or a token carry signal received by said adjacent device is asserted.

28. The arbiter circuit for use in a network switch as recited in claim 24 wherein said token distribution circuit comprises an N-bit shift register having a plurality of N flip-flops, at least one N flip-flop having an output providing one of said token priority signals, and wherein one of said flip-flops is preset to an active value, and the remainder of said flip-flops is preset to an inactive value.

29. (New) The arbiter circuit for use in a network switch as recited in claim 24 wherein:

at least one of said grant devices is operative to generate a corresponding token propagate signal in response to a corresponding request signal, and also operative to generate a corresponding token generate signal in response to a corresponding token priority signal and said corresponding request signal; and

said mediation device includes a token look ahead device operative to generate said token carry signals in response to said token propagate signals and said token generate signals, said token look ahead device for increasing the operational frequency of said arbiter circuit.

30. (New) The arbiter circuit for use in a network switch as recited in claim 29 wherein:

at least one of said grant devices is also operative to assert a corresponding token propagate signal provided that a corresponding request signal is dc-asserted; and

at least one of said grant devices is further operative to assert a corresponding

token generate signal if a corresponding token priority signal is asserted while a request signal is de-asserted.

31. (New) The arbiter circuit for use in a network switch as recited in claim 29 wherein said token look ahead device includes a circuit token carry input coupled to receive one of said token carry signals via a feed back path.

32. (New) An arbiter circuit for resolving a plurality of N request signals received from a plurality of agents requesting access to a resource, said arbiter circuit comprising:

a token distribution circuit responsive to a first clock signal defining a grant cycle, and providing a plurality of token priority signals, said distribution circuit being operative to assert a prioritized one of said token priority signals upon completion of said grant cycle; and

a plurality of N grant devices, at least one thereof being responsive to a corresponding one of said request signals, to a corresponding one of said token priority signals, and to a corresponding token carry signal provided by an adjacent one of said grant devices.

33. (New) An arbiter circuit for resolving a plurality of N request signals received from a plurality of agents requesting access to a resource, said arbiter circuit comprising:

a token distribution means, responsive to a first clock signal defining a grant cycle, for providing a plurality of token priority signals, said distribution means being operative

to assert a prioritized one of said token priority signals upon completion of said grant cycle;

mediation means mediating signals on a token ring; and

a plurality of N granting means for providing grant signals, wherein said granting means are coupled together by said token ring, at least one of said granting means being responsive to a corresponding one of said request signals, to a corresponding one of said token priority signals, and to a corresponding token carry signal.

34. (New) An arbiter circuit for use in a network switch for resolving a plurality of N request signals received from a plurality of agents requesting access to a resource, said arbiter circuit comprising:

a token distribution means, responsive to a first clock signal defining a grant cycle, for providing a plurality of token priority signals, said distribution means being operative to assert a prioritized one of said token priority signals upon completion of at least one said grant cycle;

means for mediating signals on a token ring; and

a plurality of N granting means for providing grant signals, wherein said granting means are coupled together by said token ring, at least one of said granting means being responsive to a corresponding one of said request signals, to a corresponding one of said token priority signals, and to a corresponding token carry signal.

35. (New) An arbiter circuit for resolving a plurality of N request signals received



from a plurality of agents requesting access to a resource, said arbiter circuit comprising:

a token distribution means, responsive to a first clock signal defining a grant cycle, for providing a plurality of token priority signals, said distribution means being operative to assert a prioritized one of said token priority signals upon completion of said grant cycle; and

a plurality of N granting means for providing grant signals, at least one thereof being responsive to a corresponding one of said request signals, to a corresponding one of said token priority signals, and to a corresponding token carry signal provided by an adjacent one of said grant devices.